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## **Introduction: A Symposium on Explanatory Pluralism**

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# Introduction: A Symposium on Explanatory Pluralism

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**ABSTRACT.** This introduction provides a brief sketch of explanatory pluralism and related issues. It is argued that traditional ideas in the philosophy of science about connections between levels of explanation, autonomy and reduction are too simple to account for the multifaceted explanatory relations between psychology and its neighboring disciplines. Explanatory pluralism holds that theories at different levels can co-evolve and mutually influence each other, without reduction of the higher-level theory to the lower-level one. Establishing bridges between cognitive psychological and neuro-physiological theories may suggest problems and solutions, and thus foster further development, *both ways*. The ideas put forward in this Symposium provide resources for a pluralistic view on psychological explanation, and militate against the 'single-plot story' that physiological reductionism holds up as an ideal to psychology.

**KEY WORDS:** eliminativism, explanatory pluralism, reductionism

In the era of brain sciences and behavioral genetics, of psychopharmacology and evolutionary explanations of behavior, psychology seems caught between a rock and a hard place. Either it faces annexation of its subject, human behavior and mental life, by neuroscientists and geneticists, or it may have to withdraw into not-so-splendid isolation.

This intuition can be phrased more precisely as a theoretical question about levels and domains of explanation: how are explanations of higher levels (like psychology) related to lower-level (neuroscientific) explanations: as elimination (the higher level has to go), as reduction (the higher level is to be translated into neuro-speak) or as autonomy (psychology has no truck with the lower [i.e. neuro-]sciences)?

Explanatory pluralism is a position in the philosophy of science that has been proposed as an alternative to reductionism and eliminativism, on the one hand, and methodological dualism, on the other. It holds that theories at different levels of description, like psychology and neuroscience, can co-evolve, and mutually influence each other, without the higher-level theory being replaced by, or reduced to, the lower-level one. Elimination and

reduction occur along a diachronic dimension, where the reducing theory replaces and succeeds the reduced theory. However, there is another conceivable form of intertheoretic relations, the synchronic dimension, where theories may coexist and generate problems and suggestions for solutions for each other. In the synchronic context, discrepancies between theories at different levels are a stimulus for advancing, rather than a reason for eliminating, the higher level. Explanatory pluralism thus recognizes that various interesting interlevel relations can exist beyond reduction and elimination. For psychology, it envisages many fruitful interactions between biological, genetic and evolutionary perspectives on mind and behavior.

This Special Section consists of papers originally presented at a Symposium at the Free University, Amsterdam, in December 1999. The keynote paper by Bob McCauley and Bill Bechtel proposes heuristic identity theory (HIT) to flesh out explanatory pluralism; it is followed by five discussion papers that explore different aspects of pluralism, ranging from metaphysics, to philosophy of mind, philosophy of science, and even theology.

The keynote paper by McCauley and Bechtel starts with the contrast between explanatory pluralism and so-called 'New Wave' reductionism. Explanatory pluralism envisages richer interlevel relations than eliminativism, autonomy and 'New Wave' reductionism. It acknowledges not only, like New Wave reductionism, a continuum of intertheoretic relations where the old theory can be eliminated, to some degree corrected, or smoothly reduced by its successor, but also the possibility of coexistence and co-evolution.

McCauley and Bechtel introduce the notion of heuristic identity: inquiry may benefit from hypothesizing identities across levels of analysis, for example between psychological functions and brain structures. These identities generate evidence for mutual adjustment of both levels, making evidence available across fields of research. This heuristic promotes progress in both sciences; McCauley and Bechtel illustrate the idea of heuristic identity with a well-documented empirical example at the interface of psychology and neuroscience. Psychology informs neuroscience, but knowledge of neuroanatomy points towards distinctions in psychological functions as well.

In an interesting, original and somewhat ironic twist, they turn the traditional philosophical construal of reduction, the empirical identification of mental and neural processes, into an argument *for* explanatory pluralism. Hypothesizing the identity of, for example, perceptual systems and brain structures does not in itself warrant reduction; rather, it aims to establish illuminating, but non-reductive, links between levels. In HIT, hypothesized identities are not intended as tools for the replacement of psychology by neuroscience; rather, they work as an engine of discovery for *both* levels.

Heuristic identity is unlike the traditional philosophical notion of psychophysical identity. Establishing direct evidence for identity is no requirement for the heuristic. Rather, hypothesizing identities is the starting point not the

endpoint of a multilevel research program. Finding correspondences supports the conjectural interlevel identity; finding differences leads to new and more refined hypotheses. The potential success of HIT lies not in establishing metaphysical identities but in provoking new findings and new ideas in empirical research. McCauley and Bechtel also refute some of the traditional arguments in the philosophy of mind against psycho-physiological identities.

In the first of the discussion papers, Theo Meyering defends explanatory pluralism via a discussion of antireductionist arguments in the philosophy of mind. The autonomy of levels is defended by showing the plausibility and indispensability of macro (higher-level) causation. Whereas traditionally philosophers have appealed to multiple realization to argue for autonomous, irreducible mental processes, Meyering deploys the notion of multiple supervenience to show that the physical perspective does not fix all the relevant factors in an explanation, and that a higher-level view is needed to pick out the causal properties that are explanatorily relevant. This higher perspective involves contextual information, since the same physical process could have had a different effect, and different causal powers, in a different context. Moreover, Meyering extends the multiple supervenience argument to a defense of systemic explanation: in the life sciences the systemic pattern acts as a macro-cause, and in that sense patterns are downward causes of the events that constitute them. Thus, in Meyering's analysis, the multiplicity of explanation is founded in the multiplicity of causation: higher-level systems can be causes, and distinct levels of causation support distinct levels of explanation.

In the next discussion paper, Hans Radder (a physicist by training) exposes the physicalist ontology, fashionable in some psychological circles, as a muddle. He shows that physics has no definite ready-made ontology that psychologists could adopt. Whereas some (or many) philosophers like to style themselves as physicalists and thereby reductionists, Radder shows that contemporary theoretical physics does not provide a single ontology, and that some trends in contemporary physics undermine rather than support philosophers' ideas of 'matter in motion'.

In addition, Radder argues, on the basis of a careful analysis of the practice of experimentation in physics, that Churchland's brand of physicalism, claiming that cognition is realized in a physical device such as a neural network, is unwarranted. Human agency cannot be exorcized from experimental work, and the capacities of the network cannot be fully attributed (read: reduced) to its physical make-up. This precludes the elevation of physical systems like neural networks to full human cognizers. Thus Radder elegantly establishes that physicalism and reductionism are impracticable.

Making the transition from philosophy to psychology, Sacha Bem sketches a broad picture of a pluralist ontology, in which psychology has its

own proprietary concepts: reasons, intentions and actions. Actions are essentially more than physical movements. Bem argues that it is intentional content, construed as mind–world relation, not merely abstract function or the bare logic of the internal language of thought, that accounts for the irreducibility of the level of psychology (or perhaps the many levels of psychology). Hence, contrary to the orthodoxy in the philosophy of mind, Bem argues that functionalism is not sufficient to establish the autonomy of psychology. Moreover, where that orthodoxy tends to internalism with respect to mental states, Bem argues that external action takes precedence over internal beliefs; the context in which an organism acts determines the contents of its mind, and therefore the biological and social context is what makes a mind more than a brain. In psychology, such a context is always symbolic and social, concerned with cultural meaning. Interestingly, the emphasis on action seems in line with Radder's analysis of the role of human agency in experimentation in physics.

Maurice Schouten and Huib Looren de Jong apply the notion of HIT to a typical showcase of reductionism: genetic explanations of human behavior. Their conclusion is that (heuristic) identifications of genetic and mental (behavioral, temperamental, emotional) processes are illuminating, but also provisional and partial, and by no means reductive in the classical sense.

In addition, they raise two questions for HIT. First, what are the criteria for a successful identification, or when are identifications genuinely interesting and progressive? Might failures of identification not be more interesting than confirmations? Second, some identifications are intuitively more interesting than others: those that make a large qualitative jump over levels seem more worthwhile than those between closely related domains (e.g. relating intelligence to genes seems heuristically more illuminating than relating genes to DNA).

Willem Drees finally widens the non-reductionist perspective to theology and religious experience. He rejects the intuitively plausible idea that a non-reductive approach to mind as such leaves more room for (irreducible) religious aspects of reality and human nature. First, against the neuroscientist d'Aquili, he argues that although the (purported) explanation of religious experience as a brain process indicates that religion is to be taken seriously as a part of our mental make-up, it does not support theologians' quest for a transcendent, supernatural referent of that experience. Next, he reveals the flaws in the theologian Clayton's attempt to use non-reductionist notions from the philosophy of mind (like mind–body supervenience and mental causation) to carve out some role for God in the natural world.

Drees' conclusion is that non-reductive approaches in the philosophy of mind support the case for a naturalist understanding of religion, but are of no help in defending a supernatural view of God and religious experiences. Thus, his analysis points to a interesting negative conclusion: explanatory

pluralism does not licence transcendentalism. Its pluralism is not unlimited, but stays within the bounds of naturalism.

All in all, these papers provide resources for a pluralistic view on psychology. On the one hand, against the 'one-plot story' of physics that reductionism holds up as an ideal, Meyering, Radder and Bem provide reasons why the one-level view must fail. On the other hand, McCauley and Bechtel and Schouten and Looren de Jong show that exchanges between psychological and biological levels can be fruitful. Not only are physicalism and reductionism philosophically debatable, but, in real scientific practice, pluralism reigns.

The rumors about the demise of psychology are greatly exaggerated.

HUIB LOOREN DE JONG studied experimental psychology and philosophical psychology at Vrije Universiteit, Amsterdam, and has published on event-related brain potentials, on ecological psychology and on the philosophy of mind. With Sacha Bem he wrote *Theoretical Issues in Psychology* (Sage, 1997). He presently works at the Unit of Theoretical Psychology in the Psychology Department of the Free University. ADDRESS: Vrije Universiteit, Department of Psychology, Van der Boechorststraat 1, 1081 BT Amsterdam, The Netherlands. [email: [huib@psy.vu.nl](mailto:huib@psy.vu.nl)]